



PCT/GB 2004 / 0 0 2 9 8 0



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

REC'D 20 AUG 2004

WIPO

PCT

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I also certify that the application is now proceeding in the name as identified herein.

I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 13 August 2004

**PRIORITY
DOCUMENT**

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

Patents Form 1/77

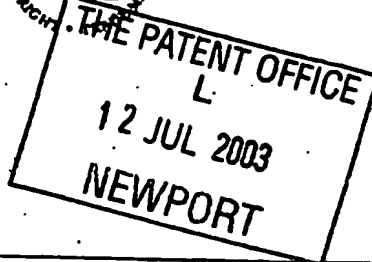
Patents Act 1977
(Rule 16)



14JUL03 E822215-1 813698
P01/7700 0.00-0316372.2

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

2. Patent application number
(The Patent Office will fill in this part)

12 JUL 2003

0316372.2

3. Full name, address and postcode of the or of each applicant (underline all surnames)

SEE ATTACHED SHEET.

Patents ADP number (If you know it)

If the applicant is a corporate body, give the country/state of its incorporation

SECTION 30 (1977 ACT) APPLICATION FILED 7/7/04

4. Title of the invention

RADIATION MONITORING AND METEOROLOGICAL DEVICE USING DIRECT DETECTION

5. Name of your agent (If you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (Including the postcode)

~~MICHAEL ANDERSON~~

~~GREENHILLS~~

~~HAVEN STREET~~

~~Iron Road 45~~

MINTZ LEVIN COHN
FARRAS GROSSKY & FARRAS
15 LUF.
THE RECTORY,
A IRONMONGER LANE,
LONDON
EC2N 8EY

Patents ADP number (If you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (If you know it) the or each application number

Country

Priority application number
(If you know it)

Date of filing
(day / month / year)

N/A.

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

N/A.

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

N/A

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 1

Claim(s) 1

Abstract 1

Drawing(s) 1

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

M. Q. W. H. J.

Date

July 1st '03

12. Name and daytime telephone number of person to contact in the United Kingdom

01983 885163

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.



INVESTOR IN PEOPLE

GB 0316372.2

By virtue of a direction given under Section 30 of the Patents Act 1977, the application is proceeding in the name of:

RADIATION WATCH LIMITED,
Greenhills House,
HAVENSTREET,
Isle of Wight,
PO33 4DT,
United Kingdom

Incorporated in the United Kingdom,

[ADP No. 08925505001]

Additional Sheet Q3.

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7/7/04
867171001
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8671943001
5863634001
SECTION 2 (187 ACT) APPLICATION FILED

Patent Application
Confidential

Anderson et al

Description: Calibrated Semiconductor high energy radiation monitoring and metrology device to allow for real time monitoring and historic recording of individual doses of specified radiation:

Abstract

A calibrated semiconductor based high energy radiation monitoring and measuring device and associated real time monitoring system. The device based on a semiconductor detector using a hybrid system consisting of a detector substrate/layer and semiconductor recording layer joined together using a direct coupling methodology. The semiconductor hybrid is an array of pixel detector hexagonal or rectangular in shape cells on a radiation sensitive substrate, each of which responds to incident radiation by generating a charge which is caused by an electron hole pair and collected by applying a bias using an electrode. The semiconductor substrate is formed of a pixelated array that matches the pixelated detection layer substrate. The combination or hybridisation of the detection substrate and the semiconductor substrate represents a pixel cell for measuring purposes; each pixel cell is calibrated against a known flux of radiation energy and photon count.

Each pixel cell consists of a charge accumulating or photon counting circuit directly resulting from the incident high energy radiation. Each pixel cell has associated read out circuitry and calibration circuitry to enable a calibrated known output for a measured incident high energy radiation dose or incident. The associated circuitry can be reset to measure and monitor incident radiation in real time. Each pixel cell has an adequate charge carrying capacity to enable high flux bursts to be measured and monitored and also plurality of successive hits prior to read out or reset. Attached to the device are memory and/or an interface for a display, fixed connection or wireless connection to a monitoring and recording system and associated software to allow real time and historic recording of the incidence of radiation on the monitoring and measuring device.

Claims:

1). A hybrid semiconductor device for monitoring and measuring radiation using an array of delineated recording cells such device comprising a detector substrate or substrates according to the ionizing radiation to monitored or measured. The detector substrate divided into an array of detecting areas or cells – hexagonal, octagonal or rectangular in shape which directly records an ionizing interaction through charge generation. The detector substrate is directly connected to a semiconductor recording or readout circuit; the said circuit have a corresponding cell type structure. Thus the combination of the detection layer and recording layer forms a unique record of an interaction of ionising radiation and an area on/in the device.

The readout/recording cell comprises of a circuit to each measure accumulated charge or photon activity directly resulting from the interaction of ionising radiation within the defined "detector cell". This can be further be recorded by energy of interaction using a threshold level detector circuit and by banding said circuits in either stripes, blocks or cell groupings and having ascending or descending layered steps.

The recording circuit furthermore contains electronic circuits to control and manage the readout to an external circuit the count or accumulated charge associated with the monitoring and measurement. The organisation of the detecting structure and associated electronic circuits is such that the circuit design will be sufficient to record transient high energy peaks without saturating.

2) The semiconductor hybrid of claim one will have a property that each cell shall be delineated and separated by the inclusion of an insulating material so that each recording cell is seen to be unique in event recording capability.
This to also include the isolation of the cell electrically from other cells.

3) The semiconductor of claim 2 will be incorporated in a device package with other electronics and will have the ability to transmit using Bluetooth or wireless networking capability, the record of radiation incident on the detector substrate in real time. Furthermore the device will be able to store information in a memory in time and intensity such that it can be downloaded at a base station or cradle assembly at a convenient point in time, said cradle will also form the basis of a battery charging platform.

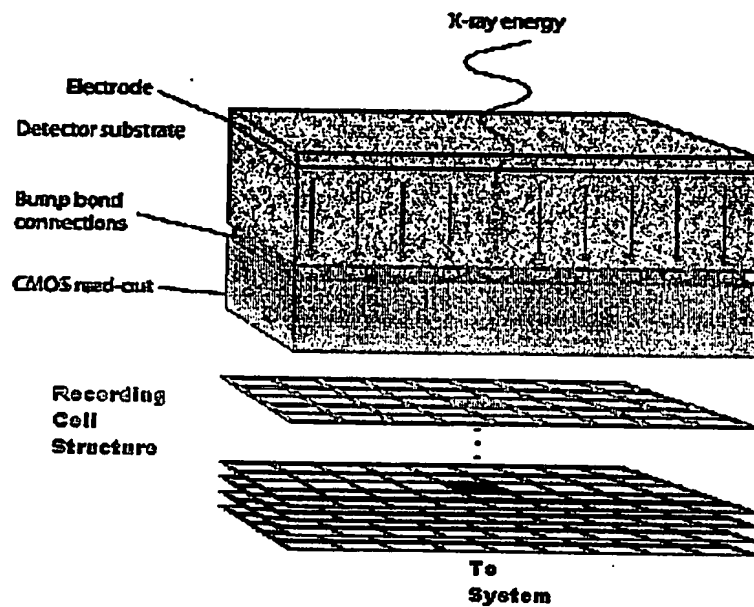
4) The recording device or device package of claim 3 will be able to be operated remotely from a power source and will be battery cell powered.

5) The packaged device of claim 4 will form part of a computer system that is used to record on a real time basis and also provide an historic record of dose and intensity of radiation over a period of time. Each device in claim 4 will have a unique identity.

Inventors: Anderson Michael John
Benson Iain
Doughty Peter Trevor
Prendergast David;

Assignment:
Application #
Art Work Date Jan 5th 2003
Filing Date

Drawings:



Drawing exhibits the generic structure of the detector layer, its bonding to the CMOS recording layer and a diagrammatic representation of the cell structure.